PATENT ABSTRACTS OF JAPAN

(11)Publication number : 07-189971
(43)Date of publication of application : 28.07.1995

(51)Int.Cl. F04C 29/10
F04C 18/344

(21)Application number : 05-333212
(22)Date of filing : 27.12.1993

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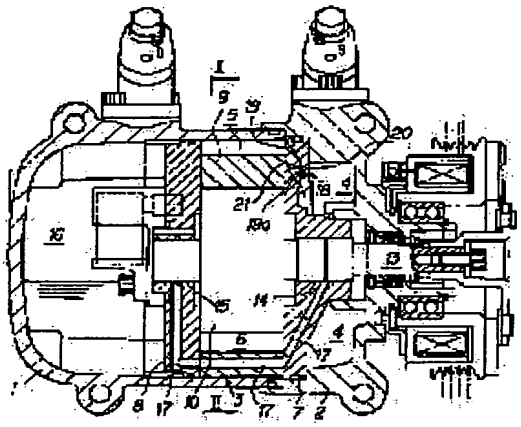
(54) GAS COMPRESSOR

(57)Abstract:
PURPOSE: To prevent an ill effect such as the generation of noise and the increase of starting torque caused by the compression of a large quantity of lubricating oil at the time of resuming operation.
CONSTITUTION: A gas compressor is provided with a pressure control valve 18 for releasing refrigerant gas in a high pressure chamber 5 to a low pressure chamber 4 so as to set the low pressure chamber 4 and the high pressure chamber 5 in the pressure equalized state at the time of stopping the compression of refrigerant gas compressed by a compressor body 3. Accordingly, when the compression of refrigerant gas by the compressor body 3 is stopped, the pressure difference between the low pressure chamber 4 and the high pressure chamber 5 is eliminated immediately after the stop so as to stop lubricating oil force-fed to the sliding part of the compressor body 3 through an oil feeding passage 17 and lubricating oil flowing into the low pressure chamber 4 from the sliding part. Lubricating oil accumulated in the low pressure chamber 4 is thereby reduced to the least possible quantity so as to reduce lubricating oil to be sucked from the low pressure chamber 4 and compressed at the time of resuming operation.



LEGAL STATUS

[Date of request for examination]	17.02.2000
[Date of sending the examiner's decision of rejection]	21.02.2003
[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]	
[Date of final disposal for application]	
[Patent number]	3493397
[Date of registration]	21.11.2003
[Number of appeal against examiner's decision of rejection]	2003-04784
[Date of requesting appeal against examiner's decision of rejection]	24.03.2003
[Date of extinction of right]	

* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1] The body of a compressor which inhales and compresses the refrigerant gas of a low pressure chamber into a compression workroom, and carries out the regurgitation to the hyperbaric chamber, In a gas compressor equipped with the oil supply way for feeding the lubricating oil of an oil reservoir room into the sliding part of the body of a compressor with the pressure of the oil reservoir room which the pressure of the above-mentioned hyperbaric chamber acts, and stores a lubricating oil, and the hyperbaric chamber which acts on this oil reservoir room The gas compressor characterized by establishing the pressure control means which opens the refrigerant gas of the hyperbaric chamber to a low pressure chamber when compression of the refrigerant gas by the above-mentioned body of a compressor is suspended.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the gas compressor used for a car air-conditioner etc., prevents generating of the evil by liquid compression of a lot of lubricating oils at the time of resumption of operation, for example, an allophone, and increase of a starting torque, and enables it to resume quiet operation by the small starting torque especially.
[0002]
[Description of the Prior Art] conventionally, as shown in drawing 3 , it has the casing 1 of an end opening mold, and the front head 2 is attached in the opening edge of casing 1, and the body 3 of a compressor contains this kind of gas compressor in casing 1 — having — **** — between the body 3 of a compressor, and the front heads 2 — a low pressure chamber (inhalatorium) 4 — moreover, the hyperbaric chamber (regurgitation room) 5 is formed between the body 3 of a compressor, and the wall of casing 1.
[0003] The body 3 of a compressor has the compression workroom 6 and 6 —. As shown in Rota 10 of the shape of a cylinder arranged pivotable in a front and the rear side blocks 7 and 8, both side block 7, the cylinder 9 of the shape of an inner circumference ellipse arranged among eight, and the cylinder 9, and drawing 4 , the compression workroom 6 and 6 — It is divided by the vane slot 11 of Rota 10, the vane 12 arranged in 11 — free [sliding], and 12 —. Moreover, the axial center (rotor shaft 13) of Rota 10 is supported by the bearings 14 and 15 of both side blocks 7 and 8. A vane 12 and 12 — are prepared so that it may be energized by the wall of a cylinder 9 with the back pressure of the lubricating oil supplied to the centrifugal force by rotation of Rota 10, the vane slot 11, and 11 —.
[0004] This body 3 of a compressor is the compression workrooms 6 and 6, when Rota 10 rotates. — Capacity changes and, thereby, they are the compression workrooms 6 and 6 about the refrigerant gas of a low pressure chamber 4. — It absorbs and compresses inside and the regurgitation is carried out to the hyperbaric chamber 5.
[0005] The oil reservoir room 16 is open for free passage to the above-mentioned hyperbaric chamber 5, by preparing the space from the body 3 of a compressor to the pars basilaris ossis occipitalis of casing 1 as an oil reservoir room 16 which stores a lubricating oil, it is formed so that the pressure of the hyperbaric chamber 5 may act, and opening of the end of the oil supply way 17 is carried out to the oil reservoir room 16, and opening of the other end of the oil supply way 17 is carried out to bearings 14 and 15.
[0006] If operation is started and Rota 10 rotates, while the lubricating oil of the oil reservoir room 16 will be fed by bearings 14 and 15 through the oil supply way 17 with the pressure of the hyperbaric chamber 5 which acts on the oil reservoir room 16, such a gas compressor Thus, the lubricating oils supplied to one bearing 14 are [the vane slot 11, 11 —, and] vanes 12 and 12. — It passes through a clearance, or the frontside block 7 and the clearance between Rota 10. Flow into the compression workroom 6 and 6 —, or The lubricating oils which flowed into the low pressure chamber 4 directly, were absorbed by the compression workroom 6 and 6 —, were compressed into them, and were supplied to the bearing 15 of another side are [the vane slot 11, 11 —, and] vanes 12 and 12. — It is flowed and compressed into compression space 6 and 6 — through a clearance, or the rear side block 8, Rota 10 and a clearance.
[0007] Thus, the lubricating oil of the oil reservoir room 16 minds the oil supply way 17 with the pressure of the hyperbaric chamber 5 which acts on the oil reservoir room 16, and is [bearings 14 and 15, the vane slot 11, 11 —, and] vanes 12 and 12. — A front, the rear side blocks 7 and 8, the clearance between Rota 10, etc. is fed by the sliding part of the body 3 of a compressor at a clearance and a list.
[0008]
[Problem(s) to be Solved by the Invention] However, if it is in the above conventional gas compressors [after not establishing at all a means to control a low pressure chamber 4 and the hyperbaric chamber 5 in the equalization condition after shutdown and suspending operation] Since it is continued by feeding the lubricating oil of the oil reservoir room 16 the sliding part of the body 3 of a compressor through the oil supply way 17 while differential pressure is in a low pressure chamber 4 and the hyperbaric chamber 5, Since a lot of lubricating oils from a low pressure chamber 4 are absorbed and compressed when the lubricating oil which flows into a low pressure chamber 4 from the sliding part of the body 3 of a compressor does not stop, but the lubricating oil of the oil reservoir room 16 finally collects so much [it is remarkable and] in the decrease low pressure chamber 4 and operation is resumed It is not avoided that the evil by liquid compression of a lot of lubricating oils at the time of resumption of operation, for example, an allophone, occurs, or a starting torque increases, and it cannot resume operation calmly by the small starting torque.
[0009] This invention was made in view of the above-mentioned situation, the place made into that purpose prevents generating of the evil by liquid compression of a lot of lubricating oils at the time of resumption of operation, for example,

an allophone, and increase of a starting torque, and it is in offering the gas compressor which can resume quiet operation by the small starting torque.
[0010]
[Means for Solving the Problem] The body of a compressor which this invention inhales and compresses the refrigerant gas of a low pressure chamber into a compression workroom, and carries out the regurgitation to the hyperbaric chamber in order to attain the above-mentioned purpose, In a gas compressor equipped with the oil supply way for feeding the lubricating oil of an oil reservoir room into the sliding part of the body of a compressor with the pressure of the oil reservoir room which the pressure of the above-mentioned hyperbaric chamber acts, and stores a lubricating oil, and the hyperbaric chamber which acts on this oil reservoir room When compression of the refrigerant gas by the above-mentioned body of a compressor is suspended, it is characterized by establishing the pressure control means which opens the refrigerant gas of the hyperbaric chamber to a low pressure chamber.
[0011]
[Function] According to this invention, if compression of the refrigerant gas by the body of a compressor is suspended, a pressure control means will open the refrigerant gas of the hyperbaric chamber wide to a low pressure chamber, and will set a low pressure chamber and the hyperbaric chamber as an equalization condition.
[0012]
[Example] Hereafter, one example of the gas compressor concerning this invention is explained based on drawing 1 and drawing 2 .
[0013] In addition, the body 3 of a compressor is contained in the fundamental configuration 1 of a gas compressor, for example, casing, and the bodies 3 of a compressor are the compression workrooms 6 and 6 about the refrigerant gas of a low pressure chamber 4. — It absorbs and compresses inside and the regurgitation is carried out to the hyperbaric chamber 5, The space from the body 3 of a compressor to the pars basilaris ossis occipitalis of casing 1 is prepared as an oil reservoir room 16 which stores a lubricating oil, and it is formed in the oil reservoir room 16 so that the pressure of the hyperbaric chamber 5 may act, The lubricating oil of the oil reservoir room 16 minds the oil supply way 17 with the pressure of the hyperbaric chamber 5 which acts on the oil reservoir room 16. A vane 12 and 12 — with bearings 14 and 15, the vane slot 11, and 11 — A clearance, Since it is the same as that of the above-mentioned conventional example to be fed by the sliding part of the bodies 3 of a compressor, such as a front, or the rear side blocks 7 and 8, a clearance between Rota 10, at a list, the same sign is given to the same member and the detail explanation is omitted.
[0014] As this gas compressor is shown in drawing 1 , the pressure control valve 18 is formed in the frontside block 7 as a pressure control means, and the pressure control valve 18 is formed from the compression spring 20 and the spherical valve element 21 which were arranged in a gas passageway 19 and this gas passageway 19.
[0015] As the end of a gas passageway 19 is shown in drawing 2 by carrying out opening of the end to the hyperbaric chamber 5, and carrying out opening of the other end to the low pressure chamber 4, as for the gas passageway 19, the part is prepared so that it may counter with the end face of a cylinder 9.
[0016] As drawing 1 Nakaya mark I shows, compression spring 20 is formed so that press energization of the valve element 21 may be carried out toward the end side of a gas passageway 19, and a part stops in contact with the end face of a cylinder 9 according to the press energization force of compression spring 20, and the valve element 21 is formed so that it may not fall out in a hyperbaric-chamber 5 side from the end side of a gas passageway 19.
[0017] For such a pressure control valve 18, the bodies 3 of a compressor are the compression workrooms 6 and 6 about the refrigerant gas of a low pressure chamber 4. — at the time of operation which absorbs and compresses inside and carries out the regurgitation to the hyperbaric chamber 5 While the pressure of the hyperbaric chamber 5 acts on a valve element 21, and a valve element 21 opposes the press energization force of compression spring 20 by this, and sticking to valve seat 19a in a gas passageway 19 and setting a gas passageway 19 as a close condition When the operation is suspended, the pressure of the hyperbaric chamber 5 declines, and a valve element 21 is put back to the original location by the press energization force of compression spring 20 by this, it keeps away from valve seat 19a, and a gas passageway 19 is set as an open condition.
[0018] Next, actuation of the constituted gas compression mind is explained based on drawing 1 and drawing 2 like the above.
[0019] When according to this gas compression mind operation is started and Rota 10 rotates, the bodies 3 of a compressor are the compression workrooms 6 and 6 about the refrigerant gas of a low pressure chamber 4. — It absorbs and compresses inside and the regurgitation is carried out to the hyperbaric chamber 5.
[0020] At this time, the pressure of the hyperbaric chamber 5 acts on the valve element 21 of a pressure control valve 18 at oil reservoir room 16 lists, and thereby, a valve element 21 is stuck to valve seat 19a in a gas passageway 19, opposing the press energization force of compression spring 20, and sets a gas passageway 19 as a close condition.
[0021] Namely, it sets at the time of operation which compresses the refrigerant gas by the body 3 of a compressor. While the hyperbaric chamber 5 and a low pressure chamber 4 are not open for free passage through a gas passageway 19, and the pressure of the hyperbaric chamber 5 is not decompressed but acting on the oil reservoir room 16 as it is The lubricating oil of the oil reservoir room 16 minds the oil supply way 17 with the pressure of the hyperbaric chamber 5 which acts on the oil reservoir room 16. A vane 12 and 12 — with bearings 14 and 15, the vane slot 11, and 11 — A clearance, A front, the rear side blocks 7 and 8, the clearance between Rota 10, etc. is fed by the sliding part of the body 3 of a compressor at a list.
[0022] Here, if the above operations are suspended, the refrigerant gas breathed out by the hyperbaric chamber 5 from the body 3 of a compressor stops, and the pressure of the hyperbaric chamber 5 declines, and the valve element 21 of a pressure control valve 18 will be put back to the original location by the press energization force of compression spring

20 by this, it will keep away from valve seat 19a, and a gas passageway 19 will be set as an open condition.
[0023] For this reason, the refrigerant gas of the hyperbaric chamber 5 is wide opened through a gas passageway 19 in a low pressure chamber 4, and a low pressure chamber 4 and the hyperbaric chamber 5 are set as an equalization condition.

[0024] That is, if compression of the refrigerant gas by the body 3 of a compressor is suspended, the differential pressure of a low pressure chamber 4 and the hyperbaric chamber 5 will be lost immediately after that, and the lubricating oil fed by the sliding part of the body 3 of a compressor through the oil supply way 17 at this and abbreviation coincidence and the lubricating oil which flows into a low pressure chamber 4 from the sliding part will stop.
[0025] Therefore, if compression of the refrigerant gas by the body of a compressor is suspended according to the gas compressor of the above-mentioned example Since the valve element of a pressure control valve sets a gas passageway as an open condition, the refrigerant gas of the hyperbaric chamber is wide opened through a gas passageway in a low pressure chamber and a low pressure chamber and the hyperbaric chamber are set as an equalization condition, Since the lubricating oil which the differential pressure of a low pressure chamber and the hyperbaric chamber disappears from immediately after shutdown, and is fed by the sliding part of the body of a compressor through an oil supply way, and the lubricating oil which flows into a low pressure chamber from the sliding part stop The lubricating oil which is absorbed from a low pressure chamber and compressed when the lubricating oils with which a low pressure chamber is covered decrease in number as much as possible and then resume operation decreases. That is, generating of the evil by a lot of liquid compression at the time of resumption of operation, for example, an allophone, and increase of a starting torque are prevented, and the restart of quiet operation is attained by the small starting torque.
[0026]
[Effect of the Invention] Since it constituted so that a pressure control means might open the refrigerant gas of the hyperbaric chamber wide to a low pressure chamber and might set a low pressure chamber and the hyperbaric chamber as an equalization condition when compression of the refrigerant gas by the body of a compressor was suspended like the above if it was in the gas compressor concerning this invention, Since the lubricating oil which the differential pressure of a low pressure chamber and the hyperbaric chamber disappears from immediately after shutdown, and is fed by the sliding part of the body of a compressor through an oil supply way, and the lubricating oil which flows into a low pressure chamber from the sliding part stop The lubricating oil which is absorbed from a low pressure chamber and compressed when the lubricating oils with which a low pressure chamber is covered decrease in number as much as possible and then resume operation decreases. That is, generating of the evil by a lot of liquid compression at the time of resumption of operation, for example, an allophone, and increase of a starting torque are prevented, and the restart of quiet operation is attained by the small starting torque.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The sectional view of the gas compressor concerning this invention.
[Drawing 2] It is shown in drawing 1 . II-II line sectional view.
[Drawing 3] The sectional view of the conventional gas compressor.
[Drawing 4] It is shown in drawing 3 . IV-IV line sectional view.
[Description of Notations]
3 Body of Compressor
4 Low Pressure Chamber
5 Hyperbaric Chamber
6 Compression Workroom
16 Oil Reservoir Room
17 Oil Supply Way
18 Pressure Control Valve

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(19)日本国特許庁（ＪＰ）　(12)公開特許公報（Ａ）　(11)特許出願公開番号

特開平7－189971

(43)公開日　平成７年(1995)７月28日

(51)Int.Cl.[6]	識別記号	庁内整理番号	ＦＩ	技術表示箇所
Ｆ０４Ｃ　29/10	３３１　Ｃ			
18/344	３５１　Ｕ			

審査請求　未請求　請求項の数１　ＯＬ　（全５頁）

(21)出願番号　特願平5－333212

(22)出願日　平成５年(1993)12月27日

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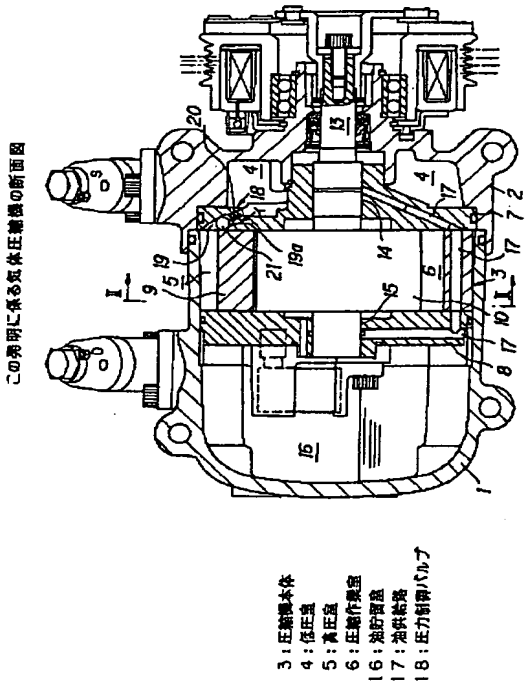
(54)【発明の名称】　気体圧縮機

(57)【要約】

【目的】　運転再開時における多量な潤滑油の液圧縮による弊害、例えば異音の発生や起動トルクの増大を防止する。

【構成】　圧縮機本体３による冷媒ガスの圧縮を停止したとき、高圧室５の冷媒ガスを低圧室４に開放し、低圧室４と高圧室５を均圧状態に設定する圧力制御バルブ１８を設ける。これにより、圧縮機本体３による冷媒ガスの圧縮を停止したときには、その直後から低圧室４と高圧室５の圧力差がなくなり、油供給路１７を介して圧縮機本体３の摺動部分に圧送される潤滑油や、その摺動部分から低圧室４に流入する潤滑油が停止するように構成し、低圧室４に溜まる潤滑油を可及的に減少させ、次に運転を再開したときでも低圧室４から吸い込まれかつ圧縮される潤滑油が少なくなるように設定する。



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【特許請求の範囲】

【請求項１】　低圧室の冷媒ガスを圧縮作業室内に吸い込み圧縮して高圧室に吐出する圧縮機本体と、上記高圧室の圧力が作用しかつ潤滑油を貯留する油貯留室と、この油貯留室に作用する高圧室の圧力により油貯留室の潤滑油を圧縮機本体の摺動部分に圧送するための油供給路とを備える気体圧縮機において、

上記圧縮機本体による冷媒ガスの圧縮を停止したとき、高圧室の冷媒ガスを低圧室に開放する圧力制御手段を設けたことを特徴とする気体圧縮機。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】この発明はカーエアコン等に用いられる気体圧縮機に関し、特に、運転再開時における多量な潤滑油の液圧縮による弊害、例えば異音の発生や起動トルクの増大を防止し、小さな起動トルクで静かな運転の再開を行えるようにしたものである。

【０００２】

【従来の技術】従来、この種の気体圧縮機は図３に示すように一端開口型のケーシング１を有し、ケーシング１の開口端にはフロントヘッド２が取り付けられ、ケーシング１内には圧縮機本体３が収納されており、圧縮機本体３とフロントヘッド２との間には低圧室（吸入室）４が、また圧縮機本体３とケーシング１の内壁との間には高圧室（吐出室）５が設けられている。

【０００３】圧縮機本体３は圧縮作業室６，６…を有し、圧縮作業室６，６…はフロント及びリアサイドブロック７，８、両サイドブロック７，８間に配設された内周楕円状のシリンダ９、シリンダ９内に回転可能に配設された円筒状のロータ１０、及び図４に示すようにロータ１０のベーン溝１１，１１…に摺動自在に配設されたベーン１２，１２…により仕切られており、またロータ１０の軸心（ロータ軸１３）は両サイドブロック７，８の軸受部１４，１５により支持され、ベーン１２，１２…はロータ１０の回転による遠心力とベーン溝１１，１１…に供給される潤滑油の背圧によりシリンダ９の内壁に付勢されるように設けられている。

【０００４】この圧縮機本体３は、ロータ１０が回転すると、圧縮作業室６，６…の容量が変化し、これにより低圧室４の冷媒ガスを圧縮作業室６，６…内に吸い込み圧縮して高圧室５に吐出する。

【０００５】圧縮機本体３からケーシング１の底部までの空間は潤滑油を貯留する油貯留室１６として設けられており、油貯留室１６は上記高圧室５に連通し、高圧室５の圧力が作用するよう形成され、また、油貯留室１６には油供給路１７の一端が開口されており、油供給路１７の他端は軸受部１４，１５に開口されている。

【０００６】このような気体圧縮機は、運転が開始されロータ１０が回転すると、油貯留室１６の潤滑油が油貯留室１６に作用する高圧室５の圧力により油供給路１７を介して軸受部１４，１５に圧送されると共に、このように一方の軸受部１４に供給された潤滑油はベーン溝１１，１１…とベーン１２，１２…の隙間やフロントサイドブロック７とロータ１０の隙間を経て圧縮作業室６，６…に流入したり、低圧室４に直接流入して圧縮作業室６，６…に吸い込まれかつ圧縮され、また他方の軸受部１５に供給された潤滑油はベーン溝１１，１１…とベーン１２，１２…の隙間やリアサイドブロック８とロータ１０と隙間を経て圧縮室６，６…に流入しかつ圧縮される。

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【０００７】このように油貯留室１６の潤滑油は、油貯留室１６に作用する高圧室５の圧力により、油供給路１７を介して軸受部１４，１５、ベーン溝１１，１１…とベーン１２，１２…の隙間、並びにフロントまたはリアサイドブロック７，８とロータ１０の隙間等、圧縮機本体３の摺動部分に圧送される。

【０００８】

【発明が解決しようとする課題】しかしながら、上記のような従来の気体圧縮機にあっては、運転停止後に低圧室４と高圧室５を均圧状態に制御する手段は何等設けられてなく、運転を停止した後においても、低圧室４と高圧室５に圧力差がある間は油貯留室１６の潤滑油が油供給路１７を介して圧縮機本体３の摺動部分に圧送され続けるため、圧縮機本体３の摺動部分から低圧室４に流入する潤滑油が止まらず、最終的には油貯留室１６の潤滑油が著しく減り低圧室４に多量に溜まり、運転を再開したとき低圧室４から多量の潤滑油が吸い込まれかつ圧縮されるので、運転再開時における多量な潤滑油の液圧縮による弊害、例えば異音が発生したり、あるいは起動トルクが増大することは避けられず、小さな起動トルクで静かに運転を再開することができない。

【０００９】この発明は上述の事情に鑑みてなされたもので、その目的とするところは運転再開時における多量な潤滑油の液圧縮による弊害、例えば異音の発生や起動トルクの増大を防止し、小さな起動トルクで静かな運転の再開を行うことが可能な気体圧縮機を提供することにある。

【００１０】

【課題を解決するための手段】上記目的を達成するために、この発明は、低圧室の冷媒ガスを圧縮作業室内に吸い込み圧縮して高圧室に吐出する圧縮機本体と、上記高圧室の圧力が作用しかつ潤滑油を貯留する油貯留室と、この油貯留室に作用する高圧室の圧力により油貯留室の潤滑油を圧縮機本体の摺動部分に圧送するための油供給路とを備える気体圧縮機において、上記圧縮機本体による冷媒ガスの圧縮を停止したとき、高圧室の冷媒ガスを低圧室に開放する圧力制御手段を設けたことを特徴とする。

【００１１】

【作用】この発明によれば、圧縮機本体による冷媒ガス

の圧縮を停止すると、圧力制御手段が高圧室の冷媒ガスを低圧室に開放し、低圧室と高圧室を均圧状態に設定する。

【００１２】

【実施例】以下、この発明に係る気体圧縮機の一実施例について図１及び図２に基づき説明する。

【００１３】なお、気体圧縮機の基本的な構成、例えばケーシング１内には圧縮機本体３が収納されており、圧縮機本体３は低圧室４の冷媒ガスを圧縮作業室６，６…内に吸い込み圧縮して高圧室５に吐出すること、圧縮機本体３からケーシング１の底部までの空間は潤滑油を貯留する油貯留室１６として設けられており、油貯留室１６には高圧室５の圧力が作用するよう形成されていること、油貯留室１６の潤滑油は油貯留室１６に作用する高圧室５の圧力により油供給路１７を介して軸受部１４，１５、ベーン溝１１，１１…とベーン１２，１２…の隙間、並びにフロントまたはリアサイドブロック７，８とロータ１０の隙間等、圧縮機本体３の摺動部分に圧送されることは、上述の従来例と同様なため、同一部材に同一符号を付しており、その詳細説明は省略する。

【００１４】この気体圧縮機は図１に示す如くフロントサイドブロック７に圧力制御手段として圧力制御バルブ１８が設けられており、圧力制御バルブ１８はガス通路１９と、このガス通路１９内に配設された圧縮ばね２０及び球状の弁体２１から形成されている。

【００１５】ガス通路１９は一端が高圧室５に開口され、かつ他端が低圧室４に開口されており、またガス通路１９の一端は図２に示すようにその一部がシリンダ９の端面と対向するように設けられている。

【００１６】圧縮ばね２０は図１中矢印イで示すように弁体２１をガス通路１９の一端側に向かって押圧付勢するように設けられており、また弁体２１は圧縮ばね２０の押圧付勢力により一部がシリンダ９の端面に当接して止まり、ガス通路１９の一端側から高圧室５側に抜け落ちないように設けられている。

【００１７】このような圧力制御バルブ１８は、圧縮機本体３が低圧室４の冷媒ガスを圧縮作業室６，６…内に吸い込み圧縮して高圧室５に吐出する運転時には、高圧室５の圧力が弁体２１に作用し、これにより弁体２１が圧縮ばね２０の押圧付勢力に逆らいながらガス通路１９内の弁座１９ａに密着し、ガス通路１９を閉の状態に設定すると共に、その運転を停止したときには、高圧室５の圧力が低下し、これにより弁体２１が圧縮ばね２０の押圧付勢力で元の位置に押し戻されて弁座１９ａから遠ざかり、ガス通路１９を開の状態に設定する。

【００１８】次に、上記の如く構成された気体圧縮気の動作について図１及び図２に基づき説明する。

【００１９】この気体圧縮気によれば、運転が開始されロータ１０が回転すると、圧縮機本体３が低圧室４の冷媒ガスを圧縮作業室６，６…内に吸い込み圧縮して高圧室５に吐出する。

【００２０】このとき、高圧室５の圧力は油貯留室１６並びに圧力制御バルブ１８の弁体２１に作用し、これにより弁体２１は圧縮ばね２０の押圧付勢力に逆らいながらガス通路１９内の弁座１９ａに密着し、ガス通路１９を閉の状態に設定する。

【００２１】即ち、圧縮機本体３による冷媒ガスの圧縮を行う運転時においては、ガス通路１９を介して高圧室５と低圧室４が連通することはなく、高圧室５の圧力は減圧されずそのまま油貯留室１６に作用すると共に、油貯留室１６の潤滑油は油貯留室１６に作用する高圧室５の圧力により油供給路１７を介して軸受部１４，１５、ベーン溝１１，１１…とベーン１２，１２…の隙間、並びにフロントまたはリアサイドブロック７，８とロータ１０の隙間等、圧縮機本体３の摺動部分に圧送される。

【００２２】ここで、上記のような運転を停止すると、圧縮機本体３から高圧室５に吐出される冷媒ガスが止まり、高圧室５の圧力が低下し、これにより圧力制御バルブ１８の弁体２１が圧縮ばね２０の押圧付勢力で元の位置に押し戻されて弁座１９ａから遠ざかり、ガス通路１９を開の状態に設定する。

【００２３】このため、高圧室５の冷媒ガスはガス通路１９を介して低圧室４に開放され、低圧室４と高圧室５は均圧状態に設定される。

【００２４】つまり、圧縮機本体３による冷媒ガスの圧縮を停止すると、その直後に低圧室４と高圧室５の圧力差がなくなり、これと略同時に油供給路１７を介して圧縮機本体３の摺動部分に圧送される潤滑油や、その摺動部分から低圧室４に流入する潤滑油が停止する。

【００２５】したがって、上記実施例の気体圧縮機によれば、圧縮機本体による冷媒ガスの圧縮を停止すると、圧力制御バルブの弁体がガス通路を開の状態に設定し、高圧室の冷媒ガスがガス通路を介して低圧室に開放され、低圧室と高圧室が均圧状態に設定されるため、運転停止の直後から低圧室と高圧室の圧力差がなくなり、油供給路を介して圧縮機本体の摺動部分に圧送される潤滑油や、その摺動部分から低圧室に流入する潤滑油が停止するので、低圧室に溜まる潤滑油が可及的に減少し、次に運転を再開するとき低圧室から吸い込まれかつ圧縮される潤滑油が少なくなる、つまり運転再開時における多量な液圧縮による弊害、例えば異音の発生や起動トルクの増大が防止され、小さな起動トルクで静かな運転の再開が可能となる。

【００２６】

【発明の効果】この発明に係る気体圧縮機にあっては、上記の如く圧縮機本体による冷媒ガスの圧縮を停止すると、圧力制御手段が高圧室の冷媒ガスを低圧室に開放し、低圧室と高圧室を均圧状態に設定するように構成したため、運転停止の直後から低圧室と高圧室の圧力差がなくなり、油供給路を介して圧縮機本体の摺動部分に圧

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送される潤滑油や、その摺動部分から低圧室に流入する潤滑油が停止するので、低圧室に溜まる潤滑油が可及的に減少し、次に運転を再開するとき低圧室から吸い込まれかつ圧縮される潤滑油が少なくなる、つまり運転再開時における多量な液圧縮による弊害、例えば異音の発生や起動トルクの増大が防止され、小さな起動トルクで静かな運転の再開が可能となる。

【図面の簡単な説明】

【図１】この発明に係る気体圧縮機の断面図。

【図２】図１に示す II-II線断面図。

【図３】従来の気体圧縮機の断面図。

【図４】図３に示す IV-IV線断面図。

【符号の説明】

３　圧縮機本体

４　低圧室

５　高圧室

６　圧縮作業室

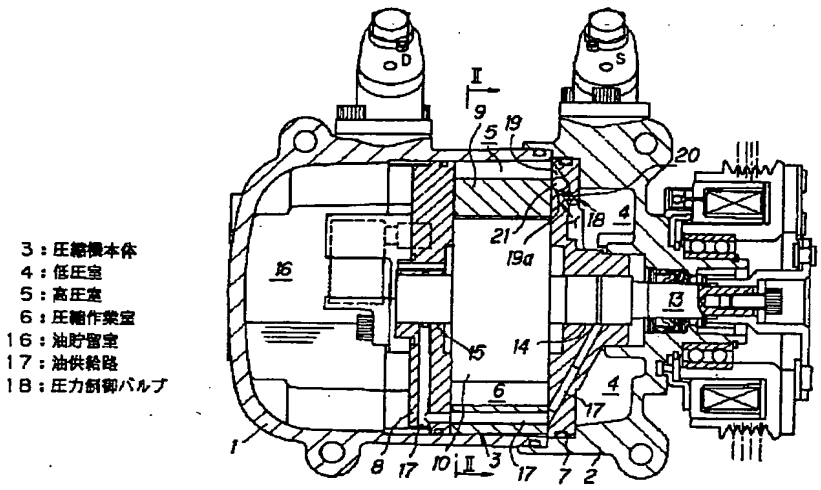
１６　油貯留室

１７　油供給路

１８　圧力制御バルブ

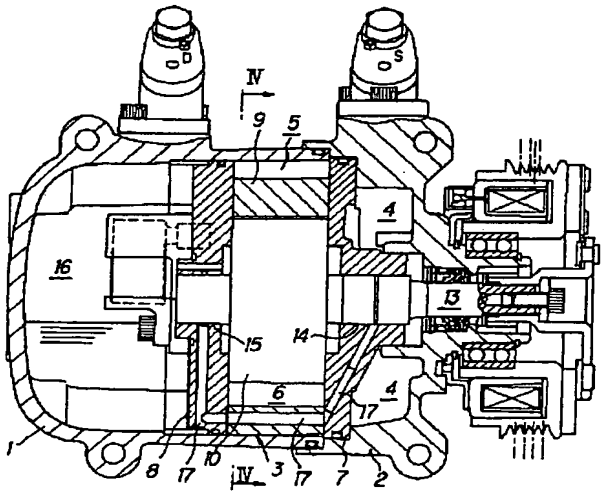
【図１】

この発明に係る気体圧縮機の断面図



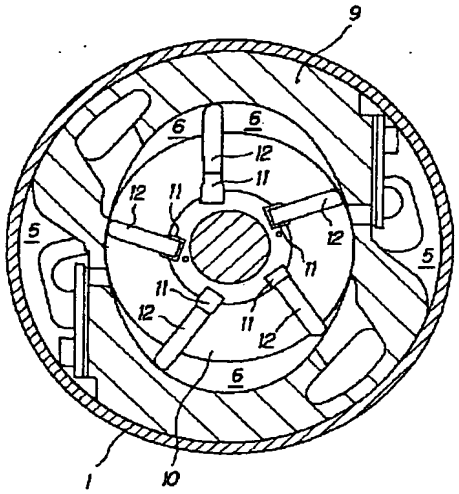
【図３】

従来の気体圧縮機の断面図



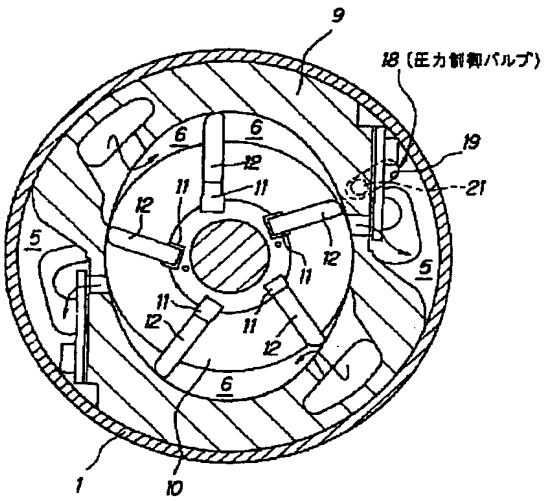
【図４】

図3に示すIV－IV線断面図



【図２】

図1に示すⅡ－Ⅱ線断面図



5：高圧室
6：圧動作業室